

PATENT ABSTRACTS OF JAPAN

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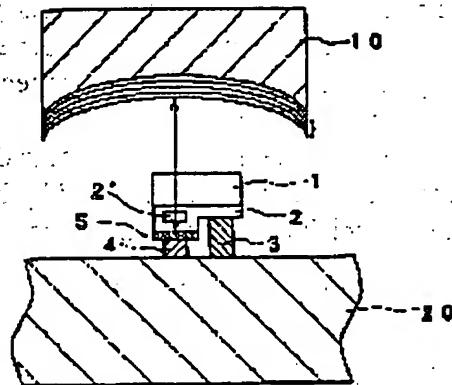
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(54) NITRIDE SEMICONDUCTOR LASER DEVICE

(57) Abstract:

PURPOSE: To provide an InAlGaN semiconductor laser which is capable of emitting laser rays of ultraviolet and blue, wherein the cleavage planes of a nitride semiconductor are made not to serve as optical resonant planes, and a new optical resonant plane is formed of the other means.

CONSTITUTION: A light emitting chip composed of a sapphire transparent substrate 1, a nitride semiconductor 2 of double-hetero structure possessed of a P-N junction, an active layer 2' provided inside the nitride semiconductor 2, a negative electrode 3, and a positive electrode 4 is mounted on a sub-mount 20. A hemispherical concave lens 10 is provided on the laser ray projecting end face of the light emitting chip, a first mirror 11 formed of dielectric multilayered film is formed on the concave face, and a second mirror 5 serving as one of the two optical resonant planes is formed on the chip. The light emitting chip is arranged inside the center of curvature of the concave mirror, whereby the emission light of the active layer 2' is resonated between a resonator equipped with a resonant plane (first mirror 11) outside the chip and another resonator equipped with a resonant plane (second mirror 5) inside the chip. A resonant state is shown by an arrow in a Figure. Light resonating between both the mirrors becomes laser rays and is projected towards a convex lens.



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[Claim(s)] 8-321660

[Claim 1] The nitride semiconductor laser element characterized by preparing one [at least] optical resonator in the exterior of the photogenesis chip with which it comes to carry out the laminating of the nitride semiconductor on a transparent substrate.

[Claim 2] The aforementioned optical resonator is a nitride semiconductor laser element according to claim 1 characterized by being the concave lens with which the concave surface-like mirror was formed to the photogenesis chip.

[Claim 3] The aforementioned optical resonator is a nitride semiconductor laser element according to claim 1 or 2 characterized by being the concave lens which has a convex to a photogenesis chip while a concave surface-like mirror is formed to a photogenesis chip.

[Claim 4] The aforementioned mirror is a nitride semiconductor laser element according to claim 2 or 3 characterized by consisting of a dielectric multilayer.